INDESTRUCTIBILITY,

ONE OF THE

GREAT TRUTHS

PROCLAIMED BY

NATURE AND SCIENCE,

TRACED THROUGHOUT SURROUNDING THINGS,

From a Bit of Coal up to the Soul of Man.

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"THERE IS NO SUCH THING AS DEATH."

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INTRODUCTION.

It is a melancholy fact to reflect upon, that, in this "age of enlightenment," men, even those favored by education, "live and die," pass through this world, in ignorance of some of those great but simple truths which are ever before them, from the first years of childhood up to the hour of their departure,—pass through life in ignorance of truths that are calculated to give them a right conception of what they themselves really are, to blunt the edge of those continually recurring petty annoyances which, we know from experience, if they do not wound deeply, make very tender sores, and interfere with the proper enjoyment of life,—in ignorance of truths that are calculated to

confer dignity upon a man even in the hours of his humiliation. We say men "live and die" in ignorance of great but simple truths, because they fail to perceive them with the eye of the mind. Most men possess an indistinct knowledge of such truths; they touch them continually, but fail to grasp them, and hence their knowledge is tantamount to ignorance.

One of these truths is embraced in the universal law of Indestructibility. Most men possess a vague knowledge of this law or truth; it is forced upon them; they are obliged to know something of it. Every one or almost every one knows that if we throw rubbish on the ground, it either remains unchanged, or else turns to manure, and nourishes and afterwards becomes part of plants. Every man knows that when he undergoes what is called death, the matter in his body assumes the new form of ashes or gases. But how few take the trouble to trace this law or truth further. It is our object to attempt this; and, if we succeed, we think that the reader will see

in a clearer light some of those subjects which too often weary and puzzle the mind of the inquirer, without affording the enjoyment to be derived from the acquisition of real knowledge.

We are to attempt, then, to trace the operations of the UNIVERSAL LAW OF INDESTRUCTIBILITY.

CHAPTER I.

Indestructibility of Matter.

We will begin with matter, with the indestructibility of matter. The term indestructibility of matter may convey no definite idea to some of our readers; we will therefore endeavour to explain it in as simple a way as we can.

Let us take up an ounce of charcoal, of common charcoal made from wood. When perfectly pure, the scientific name for it is *carbon.*

It is beyond the power of man, or of nature, so far as we are acquainted with her operations, to destroy one particle, the most minute atom, of that matter, that charcoal. If we burn it, the carbon,

or charcoal, will disappear from our sight; but it will still exist; it will only have changed its shape. The ounce of carbon, or charcoal, will have combined with between two and three ounces of oxygen, one of the gases floating in the atmosphere, to form between three and four ounces of carbonic acid gas,—an invisible vapour, destructive of animal life when inhaled, and which, on this account, is sometimes used by suicides in France, who, as is well known, destroy themselves by burning charcoal in a close room. If the carbonic acid gas be collected as it is formed, the ounce of charcoal may again be separated, and presented to our notice in the shape of black carbon, or charcoal. Or, the ounce of charcoal, floating away in the form of an invisible vapour, may come in contact with some lime, and with it form chalk; or it may be absorbed by a plant, and be changed, in nature's wonderful laboratory, to the form of sugar, starch, gum, or woody fibre. A chemist or any other man may take the sugar, starch, gum, or woody fibre, place it in a close

vessel, and, by the application of heat, drive off every thing but the carbon or charcoal, and again present it to us as a piece of coal. The ounce of carbon, or charcoal, may be made to change its form. Man can present it to our notice in a hundred, nature in ten thousand different shapes; but the ounce of carbon, or charcoal, will still exist; neither man, nor nature, so far as we are acquainted with her operations, can destroy it.

And so it is with matter of all kinds. It may be tortured; it may change its form a thousand times; but it will still exist; it will not be diminished by the loss of the fraction of a grain.

As we cannot destroy, neither can we create one particle of matter.

When a man says he makes or produces anything, he merely means to say, or should mean to say, that he presents in another shape something already existing. The charcoal-burner says he makes charcoal. He merely takes wood, which consists of carbon, or charcoal, combined with other

kinds of matter, drives those other kinds of matter off by fire, and obtains the charcoal, already existing in the wood, in its separate state. When the suicide makes carbonic-acid gas, he only procures some charcoal, and causes it to unite with a portion of the atmosphere, and take the form of an invisible vapour.

So it is with nature. She does not create matter. All her diversified and boundless productions, delightful as they are, are but old materials worked up in her wonderful laboratory into new shapes. She takes the carbon, or charcoal, floating in the form of an invisible vapour in the atmosphere, and presents it in the new shape of sugar in the luscious grape. The gases in the atmosphere, and the refuse matter in the soil, she changes into grain for the sustenance of man. But, deprive her of the materials, and her operations cease. On the arid desert she cannot produce the beautiful flower, the grateful fruit, or the useful seed; for the matter, the materials, or some of them, are not there, and she cannot create them.

Matter, we repeat, can be neither destroyed nor created by man or nature; and we have every reason for supposing that the earth with its atmosphere, contains neither a grain more nor less than it did when it came fresh from the hands of the Creator; unless, as some persons imagine, meteoric stones come from the moon or some other celestial body, in which case, the earth would be increased in quantity by the addition of this extraneous matter.

We have spoken of carbon, or charcoal, taking the form of an invisible vapour, and then the form of sugar. To some persons this may appear a startling assertion; and that we may advance cautiously, and have firm ground to stand upon, it is necessary to explain the manner in which such changes are brought about.

It has been found that when certain different kinds of matter come in contact, they do not merely mix, but unite together to form one new body or thing, differing in its external appearances

and properties from the things of which it is composed.

Let us try to simplify this. If we add lemon juice to sugar, the result will be simply a mixture possessing the properties of both its constituents, the sour taste of the lemon juice, and the sweet taste of the sugar. But if we mix lemon juice with lime, in certain proportions, the result will be, not a mixture, but the formation of a new body; the acid and lime will enter into *chemical combination* to form what is called citrate of lime; which possesses neither the sour taste of the lemon juice, nor the acrid taste or burning property of the lime, but is a nearly tasteless substance. Again: if we add together salt and cayenne pepper, we shall produce a mixture possessing the properties of both ingredients, i.e. the saline taste of the salt, and the hot taste of the cayenne pepper; but if we mix that corrosive liquid, oil of vitriol, and that acrid burning substance, lime, together with a little water, the result will be, not a mixture possessing the corrosive qualities of

these two things, but the formation of a new body called sulphate of lime or gypsum, which differs very widely from its constituents; it is not at all acrid or corrosive; it is nearly tasteless; and a healthy person might eat a quarter of a pound of it, without suffering much inconvenience.

One of the most striking and pleasing examples of *chemical combination* is witnessed when the gases called oxygen and nitric oxide are allowed to mix. These two gases are colourless and invisible, like atmospheric air; and in coming together they unite, or enter into chemical combination, to form another body called nitrous acid, which differs from both of them, and particularly in possessing a dark red colour. The reader will do well to get some friend conversant with chemistry to perform this experiment. He will be both pleased and surprised to see that, on two bottles of invisible vapour, or, according to the idea of the ignorant, two bottles containing nothing at all, being brought together, the invisible vapours unite to form quite a different thing, a

thing possessing colour. And having seen this, he will no longer wonder that nature, from charcoal and such like materials, should form such dissimilar things as sugar, starch, woody fibre, the green leaf, and the gorgeously-coloured flower.

We must remember that this wonderful process is not something that happens occasionally, now and then, but a process that is going on continually and in every place that man can reach,—in the animal frame, in the air, in the earth, and in the water. In fact, chemical combination is a very common thing in nature. The difficulty is not to point out examples, but to make a selection. When any simple substance, a metal for instance, changes its form and nature, we may infer that it has entered into chemical combination with something else to form a new body. When iron rusts, the metal unites with a portion of the atmosphere to form the new body, oxide of iron. People talk of the iron being corroded or eaten away, but this conveys an erroneous idea; for the metal, like all other kinds of matter, is indestructible; its weight

is really increased by the addition of the oxygen: an ounce of iron will form considerably more than an ounce of rust. When silver has been exposed to a foul atmosphere, and turned black, the metal on the surface has entered into union with some sulphur floating about in the air, to form what is called sulphuret of silver.

In entering into this union, the different kinds of matter, like young ladies and gentlemen about to enter the marriage state, show preferences—prefer forming a union with one rather than with another. Matter goes even beyond this: it is like a reprobate man who commits the crime of bigamy, by leaving the lady who first attracted him, and marrying another whose attraction proves more powerful. Lime will afford us an example. We will call lime the man, and carbonic acid, the gas we spoke of as being formed on the burning of charcoal, we will call the lady. Should the lime meet with the gas, it unites with it eagerly to form the new substance, carbonate of lime or chalk; but add some lemon juice, and the lime

immediately leaves the carbonic acid gas, and unites with the lemon acid to form the white powder we spoke of, called citrate of lime. Of course, the forsaken carbonic acid takes its original form of an invisible vapour again. Now pour some sulphuric acid, or vitriol, on the newly-formed citrate of lime, and the lime bids good bye to the lemon acid, leaves it to unite with the vitriol.

The lime does all this in obedience to what is called the law of elective affinity. We say lime has an affinity for, or inclination to unite with, the invisible vapour, carbonic acid; it has a greater affinity for, or inclination to unite with, lemon acid; and a still greater affinity for, or inclination to unite with, sulphuric acid, or vitriol.

Most persons have mixed together carbonate of soda and tartaric acid to make effervescing draughts; and, in so doing, they perform an experiment that illustrates the law of elective affinity. Carbonate of soda consists of soda united with the invisible vapour formed on the burning of charcoal; but the soda has a greater inclination

to unite with tartaric acid; it prefers the tartaric acid, likes it best. Therefore, when we add the tartaric acid to the carbonate of soda, the soda leaves the carbonic acid to unite with the tartaric; and the carbonic acid set free takes its usual form of an invisible vapour, and in running out of the water causes the effervescence or boiling.

If the reader will walk into a druggist's shop, and request that two fluid ounces of oil of vitriol may be poured upon one fluid ounce of simple syrup (sugar and water), he will see a striking example of elective affinity, in the separation of charcoal from sugar. If we place in a glass pure sugar, and in another glass pure water with a lump of charcoal floating upon it, both glasses will contain the same kinds of matter; only in the sugar the charcoal, or carbon, is in that intimate union called chemical combination. Now, water possesses a very great attraction or affinity for sulphuric acid, and, when the acid is poured upon the syrup, the water in the sugar leaves the carbon, or charcoal, to unite with the acid, and the carbon set free

appears in its separate state, as a black coaly mass.

When the druggist puts the carbon into the glass, it exists in the form of sugar; but, after the experiment, it will be in its separate state as charcoal. Should the druggist throw that charcoal on the coal heap, it will, probably, pass through the fire, and take the form of an invisible vapour. It may next exist as sugar again, forming part of a plant. It may next assume the shape of flesh and blood, and become part of the body of an ox. Possibly, a portion of that same charcoal may help to form the fragile frame of the soaring little lark, whose gladsome song shall cheer the reader's heart, and rise as thanksgivings to the God of nature for the life He gave it.

Let us sum up what has been stated.

In the earth, with its atmosphere, there is a quantity of different kinds of matter. The chemist enumerates about sixty kinds; but of these, so far as we know, less than twenty exist in great

abundance. The quantity of each kind is certain, fixed. We cannot increase it by the addition of the thousandth part of a grain; neither can we diminish it by the destruction or obliteration of that minute quantity.

These different kinds of matter possess the property of entering into the most intimate union with each other to form something quite unlike themselves; indeed, when they so combine that which looks like a sort of creation takes place, a new thing is formed. This mysterious, this wonderful property of matter of so uniting to form something new, is called *chemical combination*, to distinguish it from the mere mixing together of bodies. This property, or chemical combination, is the means that nature employs to produce the immense diversity of things we behold in the material universe. The material parts of animals, numerous, various, and curious as they are; the boundless productions of the vegetable kingdom, differing in form, colour, smell, and every external property; the variety of minerals of which the

earth is made; are all composed of a few kinds of matter chemically combined in different proportions.

In entering into these combinations, matter shows a preference, to which the term *elective affinity* is applied. One kind of matter will combine with another, but it shows a greater disposition to combine with a second, and a still greater disposition to combine with a third, and so on; indeed, having combined with one, it will leave it to combine with another for which it has a greater *affinity*. It elects, chooses, prefers, one kind of matter before another. *Chemical combination*, we said, is the means by which nature, from a few kinds of matter, creates the immense diversity of things in the material world; and *elective affinity* is the means by which she produces the ceaseless change we see upon the face of the earth. A particle of matter has scarcely entered into combination with some different kind of matter to form a new body, before it meets with another kind of matter which it prefers, unites with it, and forms

a newer body still. Hence, on the face of nature all is unstable—"death" and destruction alone seem paramount. To the superficial observer, things are created but "to die," to be destroyed. But, if we look beneath the surface, we find that matter bears the stamp of immortality. To the patient and humble man of science who demands to know its nature, matter, with trumpet tongue, replies I change, but still I am. That which to the ignorant seems "death" and destruction, is but a change into a newer state of being, or into a newer form of life.

CHAPTER II.

INDESTRUCTIBILITY OF THE IMPONDERABLES, HEAT, LIGHT, AND ELECTRICITY.

Having dealt with what is called matter, those gross material things that can be made evident to all our senses, or that can be weighed in a scale; (and this, the possession of weight, is the great characteristic of matter;) we will now turn to those more subtile bodies or principles, heat, light, and electricity.

The great characteristic of these principles is that they do not possess weight. For instance, if we put into a bottle matter of any kind, whether matter in a form visible to the eye, like a stone or a bit of charcoal, or whether in the invisible form, like the air floating in the atmosphere, we find the bottle, placed in a scale, weighs more than it does

if we take that matter out. But it is not so with the subtile principles, heat, light, and electricity. If we add heat to a bottle, make it very hot, it will weigh no more; or if we manage to charge it with the electric fluid, its weight in the scale will not be increased. Neither will it lose in weight if we draw the heat or electricity from it. On this account, these bodies or principles, heat, light, and electricity, have been called the imponderables, that is, things that cannot be weighed.

We said bodies or principles, because it has not yet been decided what they really are. Indeed, they are so subtile that it is with the greatest difficulty we inquire into their nature and properties at all. Matter, such as a solid, a liquid, or a vapour confined in a bottle, we can examine at our leisure; but these principles, heat, light, and electricity, will not wait our time. By making a piece of iron red hot, we obtain a large quantity of heat concentrated in the metal; but directly we proceed to examine it, we find it passes from the iron into the surrounding space, or, in common

parlance, that the iron cools. The electric principle, again, we can examine, if we may use the word examine, while it passes, quick as thought, from the clouds to the earth, in the lightning's flash; or while it passes with equal rapidity from one vessel to another on the lecture table, giving rise to what is called the electric spark.

Although these principles are so subtile that we cannot learn their nature, although they elude our grasp when we would examine closely into their properties, still thus much we do know respecting them, that they, like matter, are indestructible. This is no mere assertion, but a truth that can be verified by experience, by experiments which may be performed by any one who will take the trouble to do so.

In a red hot iron we have a large quantity of heat concentrated in a small space. That iron we know will lose the heat, or, in simple language, become cold. But the heat still exists; it is only diffused. Our common every day experience

teaches this. We know that as the iron becomes cooler, loses heat, surrounding things become warmer, receive heat. If we hold the hand at a moderate distance from the iron, we shall be sensible, from the feeling of warmth, that a portion of the heat leaving the iron enters into the hand. When the iron is cold, if we could by any means collect the heat that has passed from it, (become diffused,) and concentrate it in the iron again, of course, the iron would be red-hot once more.

So it is with electricity. When we have thunder clouds about, the condition is simply this, that the clouds or the earth at the spot contain an excessive quantity of electricity. If a lightning conductor be near, we know that the electricity will pass along it quietly; indeed, so far as the eye of man can see, there is nothing at all passing. But take away the conducting rod, and the electricity will suddenly concentrate itself in a small space, and pass in a portion of time so minute that it cannot be measured; and, at the moment of its concentration and passage, we have the

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lightning's flash; and the eye, and presently the ear too, tell us there is something there. When the electricity has become equally distributed, the storm ceases, all is calm, and we perceive nothing. But the electricity still exists with all its powers unimpaired. It is as energetic in the calm, as it was when the vivid light and the thunder's crash blanched the cheeks of the timid with fear. Nothing is wanted but its unequal distribution to give rise to the phenomena again. If by means of the electrifying machine we concentrate a portion of that electricity, and then allow it to pass suddenly, we shall have again the electric spark or shock. Or should it become unequally distributed in the clouds, or on a spot of the earth, and concentration and rapid passage follow, we shall have once more the lightning's flash and the thunder's roar; showing that the electricity still exists, with all its power unimpaired.

With respect to one of these principles, heat, there is a well-known fact which we must not pass

unnoticed. At times the heat disappears, is apparently lost altogether.

We might mention many instances in which this takes place; but one, the thawing of ice, will suffice. When ice thaws a certain quantity of heat always disappears; a fact that can easily be demonstrated in cold weather. Put into a large basin two pounds of ice-cold water. The thermometer will show its temperature to be about 32°. Add a pound of water at 212°, the boiling point. The mixture will be about 95°, or, tested by the hand, pleasantly warm. In this case, the excess of heat in the pound of boiling water becomes distributed amongst the three pounds. Now bring into your sitting room two pounds of snow or powdered ice in a basin. Plunge the thermometer into it just when it begins to thaw, and its temperature will be found to be 32°, the same temperature as ice-cold water. Pour upon it a pound of boiling water, and stir them together, and the mixture will still be at 32°, ice-cold. All the excess of heat in the boiling water suddenly disappears.

If the experimenter were to rest satisfied with extending his observations so far, he might jump to the conclusion that ice possesses the power of destroying or obliterating the principle of heat. But let him look a little closer, and he will perceive that a change has taken place, that all, or nearly all, the snow or ice has become water. And this affords an explanation of the apparent loss of the heat. Ice possesses the property of entering into that close union, called *chemical combination*, with heat. On the chemist bringing the two invisible gases together, we said they disappear, and one new body, the red gas, is formed. And so it is in the experiment we have just mentioned, and so it always is when ice or snow thaws. The solid body, the ice or snow, disappears, the subtile principle, the heat, disappears; and the new body, water, is formed.

The heat, although apparently lost, is still active: it plays its part. Abstract the heat from water, and it becomes a solid mass, stationary, firm as granite; but in combination with heat, the

solid ice becomes the mobile fluid, water, that plays as a ripple on a stream, or rages as waves of the sea. If we were to indulge in a little poetic licence, we might consider the ice as the body of the water, and the heat as the soul or spirit that gives it life and animation.

When the water becomes ice again, the heat departs, and plays its part elsewhere. This can be proved by a simple experiment. In very cold weather, a vessel of water containing a thermometer, kept perfectly still, may be cooled down to 22°, being ten degrees below the freezing point. On gently agitating the vessel, part of the water becomes ice, and at the same time the mercury in the thermometer rises ten degrees; showing the contents of the vessel to be ten degrees warmer than they were the moment before the formation of the ice.

When a pound of ice becomes water, a certain definite quantity of heat always disappears. When that water becomes ice again, the same quantity of heat is given out. If, on rising in the morning,

the reader perceives that the water in his wash-hand ewer has frozen, he may rest assured that the heat with which the ice was combined as water, has departed, and is playing its part elsewhere. Possibly, that same heat may form a minute portion of the blaze of the fire by which he eats his breakfast, or may be playing its part in some mighty conflagration that is striking terror into the heart of the beholder.

As it is with heat, so it is with the most subtile of the imponderables, light. It escapes our observation, and appears to be lost.

When the glorious sun shoots its strong rays across our path, the light of the stars is no longer visible to us. But they are still giving out light. We are certain of this; for men who go down into deep mines, beyond the influence of the sun's strong rays, at midday see the stars shining in the heavens above.

Many persons have wondered what becomes of all the light of the sun that falls upon the earth.

She reflects it back, or gives it out again, although we fail to perceive it. If the reader will, in imagination, visit the moon, we may perhaps succeed in obtaining a clear conception of this fact. We have abundance of proof that the moon, like the earth, receives her light from the sun. A conscious being residing on her surface may wonder what becomes of the light she receives. We can answer. She flings it back; and we receive a portion. The sun's light falling upon her surface is concentrated in a, comparatively speaking, small space. She flings it back in all directions, diffuses it over an immense space. The earth receives a portion much attenuated; and were there a chain of worlds in the earth's orbit, all would intercept a portion of the moon's light, all would receive the moon's pale beams. When we remember how large is the space over which her light is diffused or spread out, the wonder is not that the quantity we receive from her is so small, but that we receive so much. She keeps nothing back. She owes no allegiance to the satanic principle that grasps at all, but

imparts not; but, obedient to the dictates of her beneficent Creator, that which she gladly receives, she freely and as gladly imparts to others. She, the fair moon, may well become our instructress in a higher and nobler philosophy than we are teaching now. "Henceforth we'll love her more."

We have treated light on the more simple hypothesis that it is material; but the generally received, and we believe the most correct, hypothesis regards light as a kind of motion. According to the undulatory theory, space is filled by a subtile ether, and light is nothing more than this ether in rapid vibration.

This theory of light in no way militates against our argument; for observation and science have taught us that even motion is indestructible.

One of the established properties of matter is *inertia*; that is to say, a mass of matter being at rest has no power to put itself in motion, or being in motion has no power to destroy or lessen that motion.

If a mass of matter were put in motion in space, it would move on at the same rate for ever, unless it met with an obstacle in its path. If it met with an obstacle, the motion might be apparently, but only apparently, destroyed. Suppose two masses of matter, moving in space at a rapid rate, to come in contact. If the masses were composed of fragile materials, they would be shivered by the shock, and the particles fly off in all directions, and, if unopposed, move on for ever. But suppose the two masses neither break nor rebound. Then, they would remain stationary, and the motion would be apparently destroyed. But observe. At the moment they cease to move, they become red-hot from the blow; and heat and light fly off, move from them. There is no cessation or destruction of motion, but simply motion in another form.

To the ignorant, nothing seems easier than to destroy motion. A moving mass of matter, a wheel rotating on its axis for instance, is easily retarded and then brought to a state of rest, by

friction; but the man of science knows that so far as we suppress the motion of matter, so far do we give rise to the other kind of motion, or cause heat, light or electricity to fly or move off; and we shall presently understand clearly how futile is the attempt to suppress or destroy this other kind of motion. By bringing a mass of moving matter to rest, we no more destroy motion, than a man who converts charcoal to the invisible form destroys matter.

Before we leave the subject of the imponderables, we will dwell for a few minutes upon the great characteristic that distinguishes them from matter.

Matter, we know, possesses weight; but the imponderables do not. Weight is only a *result* of the attraction of gravitation, or the tendency which bodies or portions of matter have to move towards the centre of the earth.

We should be careful in all our scientific inquiries not to confound the result with the cause.

If a being, incapable of falling, were to ask a man "what is a fall?" and the man were to reply "a broken leg," "an injury on the head," or "an unpleasant shaking," it is evident he would be describing one of the occasional results of a fall, and not the act of falling. Errors of this kind are very common amongst people when speaking on scientific subjects; and, hence, the scientific knowledge of some persons is very indistinct, while to other persons science seems altogether incomprehensible.

Gravitation is simply the result of a property which matter or portions of matter have of being attracted by and attracting each other. If two portions of matter, the reader's gloves for instance, were removed far into space, away from the sun's and earth's attraction, they would move to each other, and produce gravitation. An actual example of this attraction may be witnessed by any one who will place a large pan or tub full of water, in a room, and put upon the surface a number of small corks at short distances from

each other. The sides of the vessel and the corks, of course, are matter, and their mutual attraction will exert its influence; and, after a time, most of the pieces of cork will be found either at the sides of the vessel, or collected together in groups on the surface of the water. Another and a better example is afforded in the formation of drops of rain, whether by natural or artificial means. On standing near an engine from which much steam is escaping, we not unfrequently find that drops of rain are falling upon us. Steam is perfectly invisible, and the white cloud we see consists of innumerable minute particles of water. Thousands of these particles of water, of matter, drawn together by their mutual attraction, coalesce to form the drops of water that fall upon us. The particles of water carried up from the sea as vapour, as they return to the earth, are attracted together in the same way into drops of rain. The earth may be considered as an immense drop. It is a mighty mass of matter; and the attraction we have described acting upon a stupendous scale, produces grand and mighty results.

We see the apple fall to the earth, and are apt to forget that the apple is attracting as well as being attracted. If the reader's gloves were placed in space, as before supposed, they would mutually attract each other, and meet half-way. If two gloves were placed in one position and one glove in another, of course the attraction of the two would be more powerful, and they would meet at a point nearer the two; the one glove would move farthest. But if a million of gloves were put in one place and a single glove in another, the effort or motion of the million towards the one glove would not be perceptible to a human eye; all it would detect would be the motion of the one glove to the million.

This applies to the earth. It is clear that anything moved from the earth's surface is quite insignificant in quantity when compared with the mighty mass of matter in the earth. If two persons, standing in England and Australia, were each to leave go of an orange at the same instant, they would only perceive the motion of the oranges

towards the great mass of matter, the earth. If the reader place a mustard seed on the ground at his feet, and hold an orange in his hand, the orange and mustard seed will mutually attract each other; but the earth and mustard seed will also mutually attract each other; and, the earth being the greater mass, the mustard seed will remain attached to it. If the reader leave hold of the orange, the mutual attraction between it and the earth will cause the orange to move to the ground; and the little mustard seed will, to a very slight extent it is true, help the earth in the process. Now if we can imagine the mighty mass of matter, the earth, to be removed, of course the orange would be the great mass, and the motion would be reversed; all we should see, unless very vigilant indeed, would be the motion of the mustard seed to the orange.

Weight is only a result of the attraction between the earth and portions of matter raised from its surface. When we weigh anything, we merely measure or find out the amount or force of attrac-

tion between the thing weighed and the earth. If an orange were found to weigh a quarter of a pound, we might best state the case by saying the attraction between the orange and the earth is the same as the attraction between the earth and the quantity of metal we have agreed to call a quarter of a pound.

The characteristic of the imponderables is, as we said, that they do not possess weight. They do not attract each other, neither is there any attraction between them and matter; and as they are not subject to attraction, they cannot possess weight.

The imponderables, heat, light, and electricity, are governed by quite a different law.

Two portions of matter in space, we said, would, by their mutual attraction, come together; but two portions of any of the imponderables would repulse each other, fly asunder. The light from a candle will afford us an example. If light attracted light as matter attracts matter, it would

remain congregated round the wick; but it does not, it flies off in every direction. A ring of people standing round the candle, the floor below, and the ceiling above, all receive a portion of the light. Perhaps we shall obtain a clearer conception of the opposite laws governing matter and the imponderables, if we imagine some cannon balls, at a white heat, to be removed far away into space. The matter, the balls, in obedience to the law of mutual attraction, would fly together; while the light and heat, in obedience to the law of mutual repulsion, would fly apart, fly off in all directions.

Matter and the imponderables being governed by these opposite laws, and being under the influence of different impulses, are continually opposing each other—doing battle with each other for the mastery. At one time matter and attraction rule; at another the imponderables and repulsion triumph.

If we make a portion of matter, water for instance, hot, we know that the heat will fly off in

all directions; but not immediately, time is required for the heat to escape. Now, this delay is not agreeable to the impulse of the imponderable, heat, which, if not confined by the matter, would fly off in an instant; and if we add sufficient heat to the water, the imponderable will overpower the attraction of the particles of the matter, the water, for each other, and drive them asunder; in the twinkling of an eye, the water will occupy more than a thousand times the space it did. It is the repulsive power of the heat driving the particles of water asunder that gives the force to steam. *No new power is created.* If we raise a large mass of matter from the earth, the attraction between it and the earth will bring them together with such force as to crush every thing that intervenes; and if we impart sufficient of the imponderable, heat, to water, its repulsive power will drive the particles of the water asunder with such force as to tear our strongest vessels, and sweep away every thing that impedes its progress.

In the decomposition of water by electricity,

we have another example of the repulsive power of the imponderables. Water consists of two gases in that intimate union we call chemical combination. On passing the electric principle into water, it actually forces the two gases apart, and causes them to occupy a greatly increased space.

To the contest between the attraction of matter and the repulsion of the imponderables, we are indebted for rain. The imponderable, heat, forces asunder the particles of water on the surface of the sea or land; and the two rise together as vapour. In the air the imponderable departs, and attraction rules; the attraction between the particles of the water brings them together into drops, and the same attraction brings those drops to the great mass of matter, the earth.

On the question whether the battle between the attraction of matter and the repulsion of the imponderables will go on for ever, science is silent. But Revelation, to which we turn with deference, does say, as the earth was overwhelmed once by

water, so it shall hereafter be dissolved by fervent heat. Still Revelation does not inform us whether this dissolution is to be accompanied by the destruction or annihilation of matter. The ignorant, who are often bold, have presumed to decide the question. Burning is associated in their minds with total destruction or annihilation. The piece of charcoal burnt disappears from their vision, and they falsely assume that it has ceased to exist, or been annihilated. Having determined in their own minds that burning is annihilation, and reading that the world shall be consumed by fire, they jump to the conclusion that the materials of which this earth is made will be annihilated. Without denying that it may be so, we think they are rash in forming the conclusion. On such a question we cannot be too cautious. But, without asserting anything, we venture to point to the possibility that the end of the world may witness the final triumph of the imponderables, that the attraction of matter which holds together this great drop in the universe, the earth, may be overcome ; that the imponderables, heat and

electricity, may force asunder the particles of matter in this globe, and reduce all to a wide spread mass of vapour invisible to an eye like that of man. On this point we make no assertion, but still think that the plain reading of the Scriptures affords good ground for the supposition that matter will not be destroyed. We speak of God by the attributes He exercises. We say God the Creator, God the Redeemer, God the Almighty; but God the destroyer does not seem to accord at all with our idea of the Supreme Being. To us, Divine Revelation no where proclaims the absolute destruction of anything. On the contrary, when it gives any information on the subject, it points to the opposite conclusion. Sinners, and even Satan himself, so offensive to the Divine Majesty, we are taught, shall escape destruction: they shall be bound and punished, but not destroyed. On what then rests the opinion that unoffending matter is doomed to absolute destruction? Its only foundation is the ignorance of those who imagine that to burn is to destroy.

CHAPTER III.

INDESTRUCTIBILITY OF THE CONSCIOUS PRINCIPLE, CALLED THE SOUL.

We have dealt with matter and the subtile principles called the imponderables. Both we find are indestructible. When matter ceases to possess one shape or form, it exists in another. When one of the subtile principles, heat for instance, leaves one place, ceases to be active in one place, it plays its part with undiminished powers elsewhere. But there is in nature another principle more subtile still than these, for which we must look within ourselves.

In the reader's frame, in the arm that holds this book, there is matter, for he sees it with his

eyes; there is probably electricity; there is certainly one of the imponderables, heat. Place your cold fingers on the warm flesh, and you feel that heat passes from it; or place a piece of ice on the reader's warm arm, and heat will run out, and unite with the ice to form the new body, water, that trickles to the ground. But we are sensible that something more resides within us; a principle more subtile than the imponderables, heat, light, and electricity, and possessing different powers and attributes; a principle that possesses consciousness, memory; that can recall the past with the feeling of pleasure or remorse, that can anticipate the future with joyous hope, with despondency, or with hopeless despair.

This principle is distinct from the matter and imponderables with which it resides. A piece of charcoal is distinct from the imponderable, heat, but we can bring them together by making the charcoal red-hot. The more subtile principle in which a man's power of consciousness resides, is distinct from both of them. Cut off the writer's

arm that holds the pen, and in the warm and quivering flesh there will be matter and the imponderable, heat, but no consciousness. The power of consciousness remains in the living trunk where still resides the principle of life, possessing knowledge.

Sometimes, it is true, the man will feel a painful sensation in the fingers, or in the spot where the fingers should be, but where there are no fingers to be seen. We mention as a curious fact, and not as part of our argument, that a man who has lost a limb, at times feels pain in that limb. If we get into conversation with some poor fellow who lost a limb years ago, and lead him to speak upon the subject, he will in all probability tell us of a painful sensation he occasionally feels, running from the stump to the toes of the limb that is not there. This is no part of our argument, but it may help us to realize the truth, that the principle in which a man's consciousness resides is not in the limb that has been taken away.

Pare the human frame, lop off every limb,

leaving but enough to form the residence of the conscious principle; and that part in which the conscious principle remains, though it be but the head alone, or, if it were possible, but part of the head, that part the man calls *himself;* all the great bulk removed to him is foreign extraneous matter. It is even doubtful, if that flesh, bone, and blood—those limbs and trunk—were placed before him a few hours after their removal, whether the imperfect eye would inform the conscious principle, that they ever formed a part of its residence. It is doubtful whether he (his conscious principle) would recognise and identify them as having been part of himself, any more than a man can recognise and identify the hair that was cut from his head years ago, or than he can identify the *carbon* that is now leaving his lungs in the invisible form, but which not long since was a portion of his living frame.

This principle is so subtile that we cannot examine it in its separate state; it eludes our

grasp. But, fortunately, we have ample proof of its existence. All men who think at all, know that there is a something within them that is neither matter nor one of the imponderables, such as heat; a something possessing consciousness, memory, and the other great powers we have mentioned; but no man can tell of his own observation whence this principle came; neither can man, by observation, tell where it goes. All that we of our own observation know is, that the principle now exists within us, that it is now taking cognizance of things around it.

Then, how can we deal with this principle, a principle so subtile that we cannot lay hold of it? We must deal with it, reason upon it, as men deal with and reason upon many other things of which they cannot obtain direct information.

Let us take one or two examples of truths which every man receives, of which every man, willing or unwilling, is firmly convinced, although he can possess no personal knowledge of them.

We are all certain that we passed the first twelve months of our existence in this world as helpless infants. We do not arrive at this truth by our own direct personal knowledge; we have no recollection of it. We never met with a man who could remember his having been an infant. How, then, do we arrive at this truth? By analogy. We see that all others younger than ourselves pass through the stage of infancy before they arrive at manhood; and we unconsciously reason thus: we are like them, and therefore must have been infants too. Reasoning by analogy, a man's mind unfalteringly maintains the truth, although he possesses no direct personal knowledge of it, although he has no recollection of the fact, that he was once a helpless infant fondled in a nurse's arms.

Another truth of which we are all firmly convinced is that we shall one day undergo the process called death; that one day the animated frame or machine will cease to be the abode of the conscious

principle; that the matter and imponderables of which the body is made up will separate, and play their part elsewhere, and that men will see us as we are now seen by them no more. We cannot arrive at this truth through our own direct personal knowledge; we have not yet experienced what is called death; it is a process to take place, in our case, at a future time. Nevertheless, we are all firmly convinced that the process will take place; and we arrive at this conviction from reasoning by analogy. All our predecessors have undergone the process; we are formed like them, and must undergo the process also. Thus, by analogy, we learn something that we have not yet experienced, something not of our past or present, but of our future, something that is to be.

And in this manner we must deal with the subtile conscious principle that dwells within us. We cannot bring it under the direct observation of our senses; and, therefore, if we reason upon it at all, it must be by analogy.

Now, so far as man has been able to extend his observation, he has found this one unvarying law, that all things are indestructible, that that which once exists always exists. To the casual or careless observer things appear to be destroyed or annihilated; but more careful examination shows, that they merely change their form or move to another place. Man cannot, and so far as we have been able to trace, we find that nature does not, destroy or annihilate the smallest atom of matter or the most minute portion of the imponderables. The utmost man can do, and the utmost nature does, is to make them change their form or play their part in another place. And, reasoning from analogy, we must conclude that, if we had the power to trace the principle whose great characteristic is consciousness, we should find, when it leaves the body, it plays its part elsewhere.

By reasoning from analogy we learn the truth, are firmly convinced, that we shall one day undergo the process called death. By the same mode of

reasoning, we learn the truth, are firmly convinced, that when the separation shall take place, not only the matter, not only the heat in the body, but also the more subtile principle that dwells with them shall still exist, with all its powers and attributes unimpaired.

We repeat, if we reason at all on the subject, we can arrive at no other conclusion. The materialist who maintains that with the body's dissolution, the conscious principle, which is, in fact, the man himself, must cease to be, stands in a strange position.

Take the warm body of a man just dead. It becomes cool; the heat passes off. But at the moment it leaves the body, it enters and expands the air, and sets it in motion. With proper light and arrangements, the eye of a beholder might be enabled to see this, and perceive a waving in the air, like that which many persons have observed over a hot stove. Every particle of matter takes a new form or employs its energy in another sphere

of action. Even the small spot of dirt that may have rested upon the skin still is, and no power on earth can destroy it.

The materialist must admit all this, because it can be made evident to his senses. He must admit that every thing that leaves the body which man can trace, is found still to exist with undiminished energy. He must admit that science and nature, whenever questioned on the subject, give one unvarying answer, "Indestructibility." And then, to maintain his position, he must assert that one thing alone when it has left the body, and that the noblest and most powerful thing in nature, the subtile conscious principle, which even now lives in the past and future, as well as in the present—in the past, by its power of memory, and in the future, by its power of hope and anticipation; he must assert that this one thing alone, while all things else, down to the very excrements, are immortal,—that this one thing alone can cease to be, can suffer annihilation.

It would be as reasonable for him to maintain that, because he has not yet experienced what is called death, he shall, should the world exist so long under its present arrangement, walk the earth, a man of flesh and blood, such as he now is, for a thousand years. He would not set reason at defiance more in the one case than in the other.

Our firm conviction that we shall one day undergo the process called death, and our firm conviction that our conscious principle, which is ourself, must still exist, both rest upon the same foundation. If we could drive from our mind the conviction that our body will one day be an inanimate corse, then it might be possible for us to entertain the opinion that the conscious principle can cease to exist. But, as it is, there is no room for doubt. We may dread the painful sensation of the process called death, as we should dread the pain from the surgeon's knife, although assured that our body's health would not suffer, if

it were determined to amputate our arm to-morrow. We may feel anxiety about the future condition of our conscious principle, as we feel anxious about the future welfare of, and provision for, our body. Beyond this we cannot go. Our conscious principle, secure of its existence, smiles at "death's arrow," and defies its point.

Men of science have almost, if not quite, ignored the conscious principle. Their minds have been so much occupied with the great discoveries that have been made with respect to matter and the imponderables, heat, light, and electricity, that they have failed to look beyond. They have ascribed to matter and the imponderables powers most astounding. They have even supposed that matter and the imponderables, in certain combinations, as seen in the animal frame, can generate a new power or principle—the power or principle of consciousness in man. They seem to overlook

the fact that all their scientific knowledge is opposed to such a supposition. For science teaches that no thing, power, or principle, is created, but that it existed before.

The mechanist unhesitatingly declares that his beautiful machinery does not create nor generate power or force, but only enables him to direct power or force already existing to any purpose he may have in view. He no more claims for his machinery the ability to create force, than a man who collects the sun's rays, by means of a lens, into a small spot, and sets fire to anything, claims to have created the sun's heat.

The chemist, from his science, has learnt that matter, a portion of charcoal, or carbon, for instance, has certain qualities and attributes; that after undergoing, during a hundred years, ten thousand changes, it still exists with its original properties unincreased and undiminished; and that when it shall have undergone ten thousand changes during another hundred years, it will be

the same, nothing will be added to its properties, and nothing taken from them.

When we see in nature anything that looks like a generation or creation of a power or property, more careful observation shows that the creation is only apparent, and not real. A piece of ice thaws, and acquires mobility. But we know that the mobility is due to the heat that has combined with the ice. The heat possessed mobility before it united with the ice, and will possess mobility when it shall have left, and the water have become ice again. Let more heat combine with the water, and we have, in the steam, expansion. But that power of expansion, of moving off in all directions, is not created; it existed in the heat before it combined with the water to form steam, and will exist in the heat when it shall have departed.

Before men of science assert that matter and the imponderables, under any arrangement, can produce the mighty principle or power of consciousness with all its collateral attributes, they

should point out one small example in science or nature, of the creation of the smallest thing or the minutest quantity of power or force, that they may have a little spot of ground on which to rest their hypothesis.

Man is prone to magnify in importance that which he sees, and to ignore that which is beyond his ken. In the savage state, he sees the glorious sun, rejoices in its warmth and brightness, and in his heart proclaims it is a God, the great benefactor, exceeding all things else; and falls down and worships it. But greater knowledge teaches him, that the heavens are spangled with innumerable suns, equalling or surpassing the orb he worships. He then looks higher for his God.

And closer observation will teach the man of science, that there is something in nature far greater than matter and the imponderables.

Let him ask his own conscious principle, and it will tell him that the machine of matter and the

imponderables, the human frame, is but an imperfect instrument that does not permit the conscious principle to exercise a tithe of its power.

Take the eye. A wonderful piece of mechanism, it is true; but an instrument quite inadequate for the exercise of the power of the conscious principle. What are the microscope and the telescope but machines to remedy, to some extent, the defects of the eye, and allow the conscious principle to take cognizance of minute and of distant objects. Does the man of science doubt but that his conscious principle, if supplied with instruments of sufficient power, could see the *ultimate atoms* of matter, or take cognizance of what is doing at the moon. His conscious principle, he doubts not, is strong enough for this. Let him endeavour to find the limit of its power, if unfettered, or permitted to exert that power to the utmost. Will he find the limit; or, will the thought flash through his mind that the power of the conscious principle seems to approach to

omiscience, that it is, in fact, formed in the image of its God.

The instrument, the body, by which the conscious principle communicates (at present) with the external world, possesses another great defect. It is not only inadequate to the power of the conscious principle, but it is also false even so far as it can be used: it rarely permits the conscious principle to see the reality, the truth. Take the eye again for an example. It tells the conscious principle that a house, seen at a distance, is no larger than a man's hat, and that the moon is no bigger than a dutch cheese; and, for one truth, brings home a thousand lies. The conscious principle, by its superior power, has detected some of these deceptions, and, to some extent, corrected them; and thus asserted its superiority over the instrument it uses. But still how little of its inherent power is displayed. Could it exert its power to the utmost, it would at a glance take in all that knowledge which the educated man, by

means of his microscope, his telescope, and thought, has acquired with so much labour.

Education does not add to the power of the conscious principle; but only calls its attention to some of the deceptions practised by the instruments it uses, and thus enables it to employ the imperfect instruments at its command (the organs of the body) to a little more advantage. The wisest man must pass through the present state, without being able to exert a tithe of the power of his conscious principle. He is obliged to acknowledge his ignorance of most things, while he feels within himself the desire and capacity to know all things.

At the dissolution of the body, the conscious principle escapes our observation altogether: we can no more see its departure, than a man can see the departure of the heat that gives mobility to water, when that water becomes solid ice. But, as we said before, there is no room for doubt of

its existence with all its power, capacity, and attributes. Let the materialist turn to science and nature, and point out, if he can, one solitary example of the obliteration or destruction of a thing, a power, a principle, or even of an attribute that has once existed. To us, science and nature, the Gods he worships, proclaim as a law divine and having no exception, "Indestructibility." They are ever writing before our eyes, and thundering in our ears, "There is no destruction; that which was is, and that which is shall be."